

## **ABSTRACT OF THE DISCLOSURE**

A method of writing a waveguide using an ultrashort laser beam is disclosed. The laser beam is directed to a substrate in transverse relation to a waveguide propagation axis to generate an ultrashort laser pulse focus in the substrate. A refractive index is modified in an affected region in the substrate along the waveguide propagation axis via the ultrashort laser pulse focus, and the ultrashort laser pulse focus is moved in a direction other than the waveguide propagation axis to generate a widened affected region along the waveguide propagation axis. The widened affected region has a cross-sectional profile capable of supporting a fundamental mode of a signal having a telecommunications infrared (TIR) wavelength, while the affected region has a cross-sectional profile incapable of supporting the fundamental mode of the signal having the TIR wavelength.